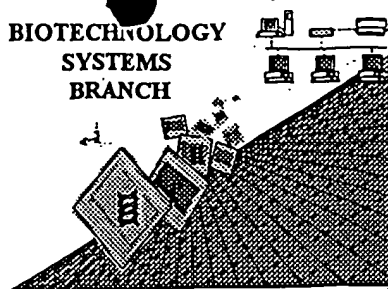


Chih-Min Kuo

BIOTECHNOLOGY  
SYSTEMS  
BRANCH



## **RAW SEQUENCE LISTING** **ERROR REPORT**

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/508,095

Source: OPE

Date Processed by STIC: 9/7/2001

**THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.**

**PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:**

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

**FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.**

**FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.**

**PATENTIN 2.1 e-mail help: [patin21help@uspto.gov](mailto:patin21help@uspto.gov) or phone 703-306-4119 (R. Wax)**

**PATENTIN 3.0 e-mail help: [patin3help@uspto.gov](mailto:patin3help@uspto.gov) or phone 703-306-4119 (R. Wax)**

**TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 3.0 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW:**

### **Checker Version 3.0**

The Checker Version 3.0 application is a state-of-the-art Windows based software program employing a logical and intuitive user-interface to check whether a sequence listing is in compliance with format and content rules. Checker Version 3.0 works for sequence listings generated for the original version of 37 CFR §§1.821 – 1.825 effective October 1, 1990 (old rules) and the revised version (new rules) effective July 1, 1998 as well as World Intellectual Property Organization (WIPO) Standard ST.25.

Checker Version 3.0 replaces the previous DOS-based version of Checker, and is Y2K-compliant. Checker allows public users to check sequence listings in Computer Readable form (CRF) before submitting them to the United States Patent and Trademark Office (USPTO). Use of Checker prior to filing the sequence listing is expected to result in fewer errored sequence listings, thus saving time and money.

**Checker Version 3.0 can be down loaded from the USPTO website at the following address:**

**<http://www.uspto.gov/web/offices/pac/checker>**

# Raw Sequence Listing Error Summary

## ERROR DETECTED

## SUGGESTED CORRECTION

SERIAL NUMBER: 09/508,095

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

- 1      Wrapped Nucleics  
    Wrapped Aminos      The number/text at the end of each line "wrapped" down to the next line. This may occur if your file was retrieved in a word processor after creating it. Please adjust your right margin to .3; this will prevent "wrapping."
- 2      Invalid Line Length      The rules require that a line not exceed 72 characters in length. This includes white spaces.
- 3      Misaligned Amino  
    Numbering      The numbering under each 5<sup>th</sup> amino acid is misaligned. Do not use tab codes between numbers; use space characters, instead.
- 4      Non-ASCII      The submitted file was not saved in ASCII(DOS) text, as required by the Sequence Rules. Please ensure your subsequent submission is saved in ASCII text.
- 5      Variable Length      Sequence(s)          contain n's or Xaa's representing more than one residue. Per Sequence Rules, each n or Xaa can only represent a single residue. Please present the maximum number of each residue having variable length and indicate in the <220>-<223> section that some may be missing.
- 6      PatentIn 2.0  
    "bug"      A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequences(s)         . Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies to the mandatory <220>-<223> sections for Artificial or Unknown sequences.
- 7      Skipped Sequences  
    (OLD RULES)      Sequence(s)          missing. If intentional, please insert the following lines for each skipped sequence:  
    (2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)  
    (i)      SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading)  
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)  
    This sequence is intentionally skipped  
  
    Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to include the skipped sequences.
- 8      Skipped Sequences  
    (NEW RULES)      Sequence(s)          missing. If intentional, please insert the following lines for each skipped sequence.  
    <210> sequence id number  
    <400> sequence id number  
    000
- 9      Use of n's or Xaa's  
    (NEW RULES)      Use of n's and/or Xaa's have been detected in the Sequence Listing.  
    Per 1.823 of Sequence Rules, use of <220>-<223> is MANDATORY if n's or Xaa's are present.  
    In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.
- 10      Invalid <213>  
    Response      Per 1.823 of Sequence Rules, the only valid <213> responses are: Unknown, Artificial Sequence, or scientific name (Genus/species). <220>-<223> section is required when <213> response is Unknown or is Artificial Sequence
- 11      Use of <220>  
    J      Sequence(s)          missing the <220> "Feature" and associated numeric identifiers and responses.  
    Use of <220> to <223> is MANDATORY if <213> "Organism" response is "Artificial Sequence" or "Unknown." Please explain source of genetic material in <220> to <223> section.  
    (See "Federal Register," 06/01/1998, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of Sequence Rules)
- 12      PatentIn 2.0  
    "bug"      Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.
- 13      Misuse of n      n can only be used to represent a single nucleotide in a nucleic acid sequence. N is not used to represent any value not specifically a nucleotide.

OIPE

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/508,095

DATE: 09/07/2001

TIME: 14:23:53

Input Set : C:\Crf3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

C--> 2 <140> CURRENT APPLICATION NUMBER: US/09/508,095  
 C--> 2 <141> CURRENT FILING DATE: 2001-08-20  
 W--> 2 <151> PRIOR FILING DATE: 1999-09-10  
 W--> 0 <110> APPLICANT:  
 W--> 0 <120> TITLE INVENTION:  
 W--> 0 <130> FILE REFERENCE:  
 4 <150> PRIOR APPLICATION NUMBER: 60/128,689  
 5 <151> PRIOR FILING DATE: 1999-04-09  
 7 <160> NUMBER OF SEQ ID NOS: 165  
 9 <170> SOFTWARE: PatentIn Ver. 2.0

Does Not Comply  
Corrected Diskette Needed

&lt;1107

&lt;1207

&lt;1407

&lt;1417

&lt;1507

These mandatory  
numeric identifiers  
and responses are missing  
corresponding to the  
indicated <1517 line

## ERRORED SEQUENCES

1952 <210> SEQ ID NO: 16  
 1953 <211> LENGTH: 2110  
 1954 <212> TYPE: PRT  
 1955 <213> ORGANISM: Pasteurella multocida  
 1957 <400> SEQUENCE: 16  
 1958 Met Gln Pro Ala Gln Glu His Cys Gln Arg Ile Asn Asn Ile Val Asn  
 1959 1 5 10 15  
 1961 Gln Glu Asn Gly Leu Phe His Thr Leu Gly Asn Met Met Leu Glu Ala  
 1962 20 25 30  
 1964 Glu Arg Ser Val Tyr Asn Ile Gly Asp Ile Tyr Ala Ser Lys Lys Leu  
 1965 35 40 45  
 1967 Thr Val His Thr His Asn Leu Ile Asn Asp Val Arg Leu Ser Gly Asn  
 1968 50 55 60  
 1970 Val Ser Tyr Lys Pro Ile Gly Ser Ser Arg Asp Tyr Asp Ile Ser Arg  
 1971 65 70 75 80  
 1973 Val Ala Val His Gly Trp His Asn Asn Val Tyr Lys Leu Asn Leu Asn  
 1974 85 90 95  
 1976 Leu Gln Glu Gln Asp Lys Thr Asp Ile Lys Val Val Lys Met Gly Ala  
 1977 100 105 110  
 1979 Ile Arg Ser Asp Gly Asp Phe Asp Phe Lys Gly Ile Lys Ala Thr Ser  
 1980 115 120 125  
 1982 Ser Glu Ser Lys Pro Gln Leu Ile Asn His Gly Leu Ile Asn Val Lys  
 1983 130 135 140  
 1985 Gly Thr Phe Asn Ala Glu Ala Asp Gln Val Val Asn Gln Met Lys Ala  
 1986 145 150 155 160  
 1988 Phe Asn Gln Asn Ala Leu Ala Ser Val Phe Lys Asn Pro Ala Lys Ile  
 1989 165 170 175  
 1991 Thr Met Tyr Tyr Gln Pro Leu Thr Arg Tyr Ile Trp Thr Pro Leu Ser  
 1992 180 185 190  
 1994 Gly Asn Ala Ser Arg Glu Phe Asn Asn Leu Glu Ser Phe Leu Asp Ala  
 1995 195 200 205  
 1997 Leu Phe Gly Ser Thr Thr Ile Leu Lys Ser Ser Phe Tyr Ser Thr Glu  
 1998 210 215 220

pp 4-6

(see  
item 12  
on Error  
summary  
sheet)

## RAW SEQUENCE LISTING

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DATE: 09/07/2001

TIME: 14:23:53

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

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2000 Asn Phe Ser Ala Tyr Gln Leu Leu Ser His Ile Gln His Ser Pro Met
2001 225                230                235                240
2003 Tyr Gln Lys Ala Met Ala Gln Val Phe Gly Ala Glu Trp His Ser Lys
2004                245                250                255
2006 Ser Tyr Asp Glu Met Arg Asn Lys Trp Lys Ser Phe Lys Glu Asn Pro
2007                260                265                270
2009 Thr Asp Phe Ile Tyr Tyr Pro Ser Glu Lys Ala Lys Ile Leu Ala Gly
2010                275                280                285
2012 Lys Leu Glu Gly Lys Leu Thr Thr Leu Gln Asn Gly Glu Tyr Ala Glu
2013                290                295                300
2015 Arg Gly Lys Phe Asp Glu Ser Ile Gln Ile Gly Lys His Gln Leu Ser
2016 305                310                315                320
2018 Leu Pro Ser Val Glu Leu Lys Ala Glu Phe Ser Asp Lys Glu Arg Leu
2019                325                330                335
2021 Glu Glu Asp Gly Val Asp Leu Ser Ser Ile Ala Glu Leu Leu Glu Met
2022                340                345                350
2024 Pro Asn Leu Phe Ile Asp Asn Ser Ile Gln Leu Glu Lys Lys Lys Leu
2025                355                360                365
2027 Ser Pro Ile Glu Asp Leu Asp Glu Glu Pro Arg Lys Asn Leu Asp Ile
2028                370                375                380
2030 Glu Glu Ser His Ser Asn Ser Ser Asp Asp Val Leu Ser Met Asn Asp
2031 385                390                395                400
2033 Asp Glu Ser Asp Thr Asp Asp Ser Lys Trp Ser Met Gly Asn Asp Glu
2034                405                410                415
2036 Lys Glu Met Pro Asp Asp Lys Leu Gly Ile Ser Arg Asp Asp Arg Gly
2037                420                425                430
2039 Asn Lys Pro Pro Arg Thr Asp Pro Thr Val Asp Tyr Leu Asn Pro Asp
2040                435                440                445
2042 Glu Phe Glu Glu Asn Gly Tyr Leu Leu Asn Glu Leu Leu Gln Glu Leu
2043                450                455                460
2045 Gly Glu Glu Pro Leu Leu Lys Glu Gly Glu Asp His Phe Lys Arg Ser
2046 465                470                475                480
2048 Thr Asn Leu Val Arg Leu Gly Glu Arg Asp Arg Gln Asn Arg Glu Lys
2049                485                490                495
2051 Arg Glu Lys Glu Gly Tyr Phe Asp Leu Pro Gly Thr Leu Asp Met Lys
2052                500                505                510
2054 Leu Gln Glu Leu Phe Glu Lys Arg Lys Gln Lys His Glu Ala Glu Gln
2055                515                520                525
2057 Lys Ala Arg Ile Glu Lys Ala Leu Leu Gln Lys Ser Glu Gln Gln Glu
2058                530                535                540
2060 Lys Arg Val Glu Glu Arg Lys Gln Glu Glu Lys Arg Gln Ala Gln Asp
2061 545                550                555                560
2063 Lys Ile Ala Lys Gln Val Glu Ile Ala Lys Glu Met Gln Arg Val Glu
2064                565                570                575
2066 Glu Ile Arg Gln Arg Glu Lys Gln Leu Ala Ile Gln Leu Gln Glu Glu
2067                580                585                590
2069 Glu Lys Lys Gln Gln Glu Glu Lys His Leu Ser Glu Glu Lys Lys Gln
2070                595                600                605
2072 Ala Glu Gln Lys Gln Lys Ala Glu Glu Lys Val Ala Gln Glu Arg Leu

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## RAW SEQUENCE LISTING

DATE: 09/07/2001

PATENT APPLICATION: US/09/508,095

TIME: 14:23:53

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

```

2073      610                      615                      620
2075 Asp Ile Glu Gln Gln Lys Ala Tyr Glu Glu Met Ala Lys Arg Glu Ala
2076 625      630                      635                      640
2078 Glu Ala Ser Lys Asn Val Leu Leu Lys Ala Ile Asp Glu Glu Arg Pro
2079      645                      650                      655
2081 Lys Val Glu Thr Asp Pro Leu Phe Arg Thr Lys Leu Lys Tyr Ile Asn
2082      660                      665                      670
2084 Gln Asp Asp Tyr Ala Gly Ala Asn Tyr Phe Phe Asn Lys Val Gly Leu
2085      675                      680                      685
2087 Asn Thr Lys Gly His Gln Lys Val Asn Val Leu Gly Asp Asn Tyr Phe
2088      690                      695                      700
2090 Asp His Gln Val Ile Thr Arg Ser Ile Glu Lys Lys Val Asp Asn His
2091 705      710                      715                      720
2093 Leu Asn Gln Lys Tyr Asn Leu Ser Asp Val Glu Leu Val Lys Gln Leu
2094      725                      730                      735
2096 Met Asp Asn Ser Thr Thr Gln Ala Gln Glu Leu Asp Leu Lys Leu Gly
2097      740                      745                      750
2099 Ala Ala Leu Thr Lys Glu Gln Gln Ala Asn Leu Thr Gln Asp Ile Val
2100      755                      760                      765
2102 Trp Tyr Val Lys Thr Lys Val Lys Gly Lys Asp Val Phe Val Pro Lys
2103      770                      775                      780
2105 Val Tyr Phe Ala Ser Glu Thr Leu Val Glu Ala Gln Lys Leu Gln Gly
2106 785      790                      795                      800
2108 Leu Gly Thr Gly Thr Ile Arg Val Gly Glu Ala Lys Ile Lys Ala Lys
2109      805                      810                      815
2111 Asp Val Val Asn Thr Gly Thr Leu Ala Gly Arg Lys Leu Asn Val Glu
2112      820                      825                      830
2114 Ala Ser Asn Lys Ile Lys Asn Gln Gly Ser Ile Leu Ser Thr Gln Glu
2115      835                      840                      845
2117 Thr Arg Leu Val Gly Arg Lys Gly Ile Glu Asn Val Ser Arg Ser Phe
2118      850                      855                      860
2120 Ala Asn Asp Glu Leu Gly Val Thr Ala Gln Arg Ser Glu Ile Lys Thr
2121 865      870                      875                      880
2123 Glu Gly His Leu His Leu Glu Thr Asp Lys Asp Ser Thr Ile Asp Val
2124      885                      890                      895
2126 Gln Ala Ser Asp Ile Lys Ala Lys Thr Ser Phe Val Lys Thr Gly Asp
2127      900                      905                      910
2129 Val Asn Leu Lys Asn Thr Tyr Asn Thr Lys His Ala Tyr Arg Glu Lys
2130      915                      920                      925
2132 Phe Ser Pro Ser Ala Leu Gln Val Ala Glu Leu Asp Val Ala Gly Leu
2133      930                      935                      940
2135 Lys Val Pro Leu Leu Gly Val Ser Ser Pro Ser Ser Tyr Ser Glu His
2136 945      950                      955                      960
2138 Thr Ser Glu Ala Thr Ser Glu Gly Ser Ile Phe Glu Val Gly His Leu
2139      965                      970                      975
2141 His Leu Ala Val Asp Arg Asp Val Asn Gln Ala Gly Ser Lys Ile Lys
2142      980                      985                      990
2144 Ala Lys Tyr Thr Thr Gly Val Val Lys Gly Asn Phe Asn Thr Glu Ala
2145      995                      1000                      1005

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RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/508,095

DATE: 09/07/2001  
TIME: 14:23:53

Input Set : C:\Crif3\Datahold\09545199  
Output Set: N:\CRF3\09072001\I508095.raw

2147 Gly Lys Asn Ile Lys His Val Glu Lys Glu Glu Tyr Ser Ser Gln Leu  
2148 1010 1015 1020  
2150 Phe Ala Ser Ala His Ala Ser Gly Gly Gly Thr Ser Val Arg Tyr Asp  
E--> 2151 (025) /025 1030 1035 1040  
2153 Tyr Asn Ser Gln Asp Gly Gly Asn Ala Ser Val Gly Val Pro Thr Asn  
2154 1045 1050 1055  
2156 His Thr Gly Val Gly Ala Glu Ala Gly Met Ser Phe Thr His Thr Lys  
2157 1060 1065 1070  
2159 Asp Lys Glu Thr Leu Leu Thr His Thr Asn Ser Glu Leu Gln Val Lys  
2160 1075 1080 1085  
2162 His Gly Lys Leu His Val Leu Gly Tyr Ala Asp Ile Gly Gly Val Asp  
2163 1090 1095 1100  
2165 Ile Asn Thr Lys Leu Pro Glu Asp Ala Gln Ser Lys Ala Gln Lys Glu  
E--> 2166 (105) /105 1110 1115 1120  
2168 Ile Ala Ala Ser Lys Pro Glu Lys Thr Glu Gln Ser Ala Gln Asp Val  
2169 1125 1130 1135  
2171 Ala Gln Ala Gln Ser Asn Ala Asn Lys Asp Lys Glu Asn Lys Ala Pro  
2172 1140 1145 1150  
2174 Glu Ile Lys Glu Leu Ser Glu Ala Glu Ile Ala Asp Leu Met Ser Glu  
2175 1155 1160 1165  
2177 Lys Ser Lys Ala Tyr Phe Asp Asp Phe Ala Glu Gln Ala Lys Lys Ala  
2178 1170 1175 1180  
2180 Pro Glu Asn Asn Arg Phe Glu Leu Ser Ala Lys Glu Ile Lys Ser Ser  
E--> 2181 (185) /185 1190 1195 1200  
2183 Lys Gln Lys Asp Gln Tyr Asp His Glu Ser Glu Arg Thr Thr Phe Lys  
2184 1205 1210 1215  
2186 Val Gly Pro Glu Ala Glu Ala His Ser Ala Val Ala Asp Met Val Ser  
2187 1220 1225 1230  
2189 His Leu Val Lys Glu Tyr Arg Asp Ala Gln Asn Gly Thr Lys Gln Asp  
2190 1235 1240 1245  
2192 Gly Thr Val Ala Leu Gln His Ala Ser Asp Val Leu Asn Ile Val Thr  
2193 1250 1255 1260  
2195 Gly Asp Leu Ala Gly Ser Ser Ala Lys Leu Ser Val Glu Arg Thr His  
E--> 2196 (265) /265 1270 1275 1280  
2198 Glu Thr Lys Arg Thr Thr Glu Thr Gly Asp Ile Val Thr Lys Ile Gly  
2199 1285 1290 1295  
2201 Gly Asn Val Thr Leu Ser Ala Arg Ser Gly Ser Val Asn Leu Lys Asn  
2202 1300 1305 1310  
2204 Val Gln Ser Asp Glu Gln Ala Asn Leu Thr Leu Arg Ala Lys Glu Asp  
2205 1315 1320 1325  
2207 Val Asn Val Leu Ser Gly Glu Lys Thr Arg Glu Thr Thr Glu Thr Val  
2208 1330 1335 1340  
2210 Ser Arg Gln Lys Leu Ser His Gly Val Asn Ala Gly Cys Ser Met Met  
E--> 2211 (345) /345 1350 1355 1360  
2213 Ser Gly Ala Cys Thr Ala Gly Val Ser Thr Ser Leu Glu Gly Asn Glu  
2214 1365 1370 1375  
2216 Ser Tyr Thr Ser Glu Arg Glu Thr Ala Gln Asn Asn Ser Phe Leu Lys  
2217 1380 1385 1390  
2219 Ala Arg Asn Met Lys Val Glu Ala Gly Arg Asp Phe Asn Val Val Ser

When  
numbering  
first amino  
acid on a line,  
begin number  
under first  
letter of amino  
acid  
e.g. Phe  
1025

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/508,095

DATE: 09/07/2001  
TIME: 14:23:53

Input Set : C:\Crif3\Datahold\09545199  
Output Set: N:\CRF3\09072001\I508095.raw

2220 1395 1400 1405  
2222 Ser Asn Ile Asp Ala Asp Lys Leu Asp Leu His Val Lys Gly Lys Thr  
2223 1410 1415 1420  
2225 Asn Val Val Ser Lys Gln Asp Thr Leu Gln Lys Val Thr His Gly Val  
E--> 2226 425 1430 1435 1440  
2228 Asp Tyr Asn Leu Ser Ala Gly Val Ala Leu Ser Ser Ala Thr Ile Ala  
2229 1445 1450 1455  
2231 Thr Pro Thr Gly Asn Val Gly Phe Gly Tyr Thr Asn Glu Thr Glu Ser  
2232 1460 1465 1470  
2234 Lys Arg Thr Val Asn Gln Gln Ala Gly Ile Lys Ala Asn Lys Ile Thr  
2235 1475 1480 1485  
2237 Gly Gln Thr His Asp Leu Asn Leu Glu Gly Gly Tyr Leu Val Ser Asn  
2238 1490 1495 1500  
2240 Asp Lys Asp Asn Gln Leu Lys Val Thr Gly Asp Val Thr Thr Lys Ala  
E--> 2241 505 1510 1515 1520  
2243 Leu His Asp Gln His Asp Lys Asp Gly Gly Thr Phe Gly Leu Ser Val  
2244 1525 1530 1535  
2246 Gly Ile Ser Glu Arg Gly Thr Thr Ala Phe Asn Val Arg Gly Gly Arg  
2247 1540 1545 1550  
2249 Ala Glu Gln Lys His Tyr Asn Ala Thr Gln Lys Ser Thr Leu Ser Gly  
2250 1555 1560 1565  
2252 Val Asp Thr Ser Gln Ala Asn Val Ser Gly Gln Val Asn Thr Asp Leu  
2253 1570 1575 1580  
2255 Thr Lys Ala Lys Ala Val Thr Arg Asp Asp Thr Tyr Ala Ser Thr Gln  
E--> 2256 585 1590 1595 1600  
2258 Phe Ser Phe Glu Val Ala Asp Ile Val Glu Leu Gly Gln Arg Ala Lys  
2259 1605 1610 1615  
2261 Asn Lys Leu Ser Ala Pro Asn Asn Asp Thr Asp Met Ala Ser Gly Ser  
2262 1620 1625 1630  
2264 Thr Leu Arg Ser Arg Ser Thr Thr Glu Glu Ala Asp Val Pro Thr Thr  
2265 1635 1640 1645  
2267 Arg Ser Arg Val Thr Asp Glu Ala Asp Ser Val Ser Val Lys Asn Pro  
2268 1650 1655 1660  
2270 Ile Tyr Glu Ser Ala Asp Ala Val Val Pro Thr Pro Arg Ser Arg Asn  
E--> 2271 665 1670 1675 1680  
2273 Val Asp Ser Thr Asp Leu Val Asp Asn Pro Leu Tyr Ala Ser Ala Thr  
2274 1685 1690 1695  
2276 Thr Lys Ala Asn Ile His Asp Tyr Glu Glu Ile Pro Ala Val Tyr Ser  
2277 1700 1705 1710  
2279 Lys Val Gly Asp Asn Asn Ala Asp Leu Val Arg His Lys Thr Ala Thr  
2280 1715 1720 1725  
2282 Ser Asp Glu His Leu Tyr Ala Glu Ile Asn Glu Pro Thr Tyr Ser Arg  
2283 1730 1735 1740  
2285 Val Gly Asp Lys Asn Ala Asp Met Arg Arg His Asn Ala Ala Gly Thr  
E--> 2286 745 1750 1755 1760  
2288 Thr Asp Tyr Ala Asp Val Val Gln Ala His Thr Arg Lys Ala Asp Asp  
2289 1765 1770 1775  
2291 Pro Leu Pro Ala Leu Pro Asn Gln Gly Lys Ala Arg Thr Val Asn Asp  
2292 1780 1785 1790

*same  
error*

## RAW SEQUENCE LISTING

DATE: 09/07/2001

PATENT APPLICATION: US/09/508,095

TIME: 14:23:53

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

2294 Gly Ser Glu His Ile Tyr Thr Asp Ile Ser Asp Val Gly Thr Gln Thr  
2295 1795 1800 1805  
2297 Lys Ala Ile Asp Ser Thr Tyr Ala Thr Val Gly Met Pro Lys Ala Asn  
2298 1810 1815 1820  
2300 Ala Val Asn Leu Ile Gly Gln Asn Gly Leu Gly Ser Ile Tyr His Ser  
E--> 2301 825 1830 1835 1840  
2303 Pro Asp Ser Ala Tyr Lys Thr Trp Gln Leu Asp Gln Phe Ala Asn  
2304 1845 1850 1855  
2306 Lys Gly Gly Asp Ala Val Phe Leu Arg Pro Ala Thr Glu Met Lys Cys  
2307 1860 1865 1870  
2309 Ala Gly Ala Pro Leu Lys Tyr Thr Phe Ile Val Arg Asp Tyr Leu Leu  
2310 1875 1880 1885  
2312 Arg Arg His Thr Leu Asp Lys Ser Arg Leu Phe Tyr Asn Ala His Asn  
2313 1890 1895 1900  
2315 Lys Thr Leu Phe Ser Val Pro Ile Val Asp Ala Lys Val Lys Met Leu  
E--> 2316 905 1910 1915 1920  
2318 Phe Ala Glu Lys Asn Ile Gln Val Asn Tyr Asp Arg Ser Leu Thr Ala  
2319 1925 1930 1935  
2321 Ile Asp Leu Ser Lys Arg Ile Ala Thr Phe Asn Ser Pro Glu Gly Val  
2322 1940 1945 1950  
2324 Val Glu Val Pro Tyr Asp Phe Ile Asn Val Val Pro Pro Met Arg Ala  
2325 1955 1960 1965  
2327 Pro Asp Ala Val Arg Gln Ser Ala Leu Ala Trp Gln Glu Gly Lys Trp  
2328 1970 1975 1980  
2330 Ala Asn Asp Gly Trp Val Glu Val Glu Lys His Thr Leu Arg His Arg  
E--> 2331 985 1990 1995 2000  
2333 Arg Tyr Ala Asn Val Phe Ala Val Gly Asp Val Ala Gly Val Pro Lys  
2334 2005 2010 2015  
2336 Gly Lys Thr Ala Ala Ser Val Lys Trp Gln Val Pro Val Ala Val Ala  
2337 2020 2025 2030  
2339 His Leu Leu Ala Glu Leu Glu Gly Lys Pro Cys Asp Glu Ile Tyr Asn  
2340 2035 2040 2045  
2342 Gly Tyr Thr Ser Cys Pro Leu Ile Thr Gln Leu Gly Lys Gly Met Leu  
2343 2050 2055 2060  
2345 Val Glu Phe Asp Tyr Asn Asn His Leu Thr Pro Ser Phe Pro Gly Val  
E--> 2346 065 2070 2075 2080  
2348 Ile Ala Pro Leu Glu Glu Leu Trp Ala Thr Trp Ala Ile Lys Thr Leu  
2349 2085 2090 2095  
2351 Gly Leu Lys Pro Thr Tyr Leu Gly Met Leu Arg Gly Leu Ala  
2352 2100 2105 2110  
3855 <210> SEQ ID NO: 28  
3856 <211> LENGTH: 450  
3857 <212> TYPE: PRT  
3858 <213> ORGANISM: Pasteurella multocida  
3860 <400> SEQUENCE: 28  
3861 Ser Thr Lys Val Gly Tyr Asp Ile Asn Asn Thr His Arg Phe Thr Leu  
3862 1 5 10 15  
3864 Phe Leu Glu Asp Arg Arg Glu Lys Lys Leu Thr Glu Glu Lys Thr Leu  
3865 20 25 30

# RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/508,095

DATE: 09/07/2001

TIME: 14:23:53

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

3867 Gly Leu Ser Asp Ala Val Arg Phe Ala Asn Asp Gln Thr Pro Tyr Leu  
3868 35 40 45  
3870 Arg Tyr Gly Ile Glu Tyr Arg Tyr Asn Gly Leu Ser Trp Leu Glu Thr  
3871 50 55 60  
3873 Val Lys Leu Phe Leu Ala Lys Gln Lys Ile Glu Gln Arg Ser Ala Leu  
3874 65 70 75 80  
3876 Gln Glu Phe Asp Ile Asn Asn Arg Asn Lys Leu Asp Ser Thr Met Ser  
3877 85 90 95  
3879 Phe Val Tyr Leu Gln Arg Gln Asn Ile Ala Arg Gly Glu Phe Ser Thr  
3880 100 105 110  
E--> 3882 Ser Pro Leu Tyr Trp Gly Pro Ser Arg His Arg Leu Xaa Ala Lys Phe  
3883 115 120  
E--> 3885 Glu Phe Arg Asp Xaa Phe Leu Glu Asn Met Asn Lys Xaa Phe Thr Phe  
3886 130 135 140  
E--> 3888 Arg Pro Trp Gln Ile Asn Xaa Phe Arg Gln Gln Gly Arg Asn Asn Tyr  
3889 145 150 155 160  
3891 Thr Glu Val Phe Pro Val Lys Ser Arg Glu Phe Ser Phe Ser Leu Met  
3892 165 170 175  
3894 Asp Asp Ile Lys Ile Gly Glu Leu Leu His Leu Gly Leu Gly Gly Arg  
3895 180 185 190  
3897 Trp Asp His Tyr Asn Tyr Lys Pro Leu Leu Asn Ser Gln His Asn Ile  
3898 195 200 205  
3900 Asn Arg Thr Gln Arg Leu Pro Tyr Pro Lys Thr Ser Ser Lys Phe Ser  
3901 210 215 220  
3903 Tyr Gln Leu Ser Leu Glu Tyr Gln Leu His Pro Ser His Gln Ile Ala  
3904 225 230 235 240  
3906 Tyr Arg Leu Ser Thr Gly Phe Arg Val Pro Arg Val Glu Asp Leu Tyr  
3907 245 250 255  
3909 Phe Glu Asp Arg Gly Lys Ser Ser Ser Gln Phe Leu Pro Asn Pro Asp  
3910 260 265 270  
3912 Leu Gln Pro Glu Thr Ala Leu Asn His Glu Ile Ser Tyr Arg Phe Gln  
3913 275 280 285  
3915 Asn Gln Tyr Ala His Phe Ser Val Gly Leu Phe Arg Thr Arg Tyr His  
3916 290 295 300  
3918 Asn Phe Ile Gln Glu Arg Glu Met Thr Cys Asp Lys Ile Pro Tyr Glu  
3919 305 310 315 320  
3921 Tyr Asn Arg Thr Tyr Gly Tyr Cys Thr His Asn Thr Tyr Val Met Phe  
3922 325 330 335  
3924 Val Asn Glu Pro Glu Ala Val Ile Lys Gly Val Glu Val Ser Gly Ala  
3925 340 345 350  
3927 Leu Asn Gly Ser Ala Phe Gly Leu Ser Asp Gly Leu Thr Phe Arg Leu  
3928 355 360 365  
3930 Lys Gly Ser Tyr Ser Lys Gly Gln Asn His Asp Gly Asp Pro Leu Lys  
3931 370 375 380  
3933 Ser Ile Gln Pro Trp Thr Val Val Thr Gly Ile Asp Tyr Glu Thr Glu  
3934 385 390 395 400  
3936 Gly Trp Ser Val Ser Leu Ser Gly Arg Tyr Ser Ala Ala Lys Lys Ala  
3937 405 410 415  
3939 Lys Asp Ala Ile Glu Thr Glu Tyr Thr His Asp Lys Lys Val Val Lys

see item 9  
on Enr  
summary sheet

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/508,095

DATE: 09/07/2001

TIME: 14:23:53

Input Set : C:\Crf3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

3940                    420                    425                    430  
3942 Gln Trp Pro His Leu Ser Pro Ser Tyr Phe Val Val Asp Phe Thr Gly  
3943                    435                    440                    445  
3945 Gln Val  
3946                    450  
5300 <210> SEQ ID NO: 36  
5301 <211> LENGTH: 302  
5302 <212> TYPE: PRT  
5303 <213> ORGANISM: Pasteurella multocida  
5305 <400> SEQUENCE: 36  
5306 Met Asn Ile Leu Phe Val Ser Asp Asp Val Tyr Ala Lys His Leu Val  
5307    1                    5                    10                    15  
5309 Val Ala Ile Lys Ser Ile Ile Asn His Asn Glu Lys Gly Ile Ser Phe  
5310                    20                    25                    30  
5312 Tyr Ile Phe Asp Leu Gly Ile Lys Asp Glu Asn Lys Arg Asn Ile Asn  
5313                    35                    40                    45  
5315 Asp Ile Val Ser Ser Tyr Gly Ser Glu Val Asn Phe Ile Ala Val Asn  
5316                    50                    55                    60  
5318 Glu Lys Glu Phe Glu Ser Phe Pro Val Gln Ile Ser Tyr Ile Ser Leu  
5319    65                    70                    75                    80  
5321 Ala Thr Tyr Ala Arg Leu Lys Ala Ala Glu Tyr Leu Pro Asp Asn Leu  
5322                    85                    90                    95  
5324 Asn Lys Ile Ile Tyr Leu Asp Val Asp Val Leu Val Phe Asn Ser Leu  
5325                    100                    105                    110  
5327 Glu Met Leu Trp Asn Val Asp Val Asn Asn Phe Leu Thr Ala Ala Cys  
5328                    115                    120                    125  
5330 Tyr Asp Ser Phe Ile Glu Asn Glu Lys Ser Glu His Lys Lys Ser Ile  
5331                    130                    135                    140  
5333 Ser Met Ser Asp Lys Glu Tyr Tyr Phe Asn Ala Gly Val Met Leu Phe  
5334    145                    150                    155                    160  
5336 Asn Leu Asp Glu Trp Arg Lys Met Asp Val Phe Ser Arg Ala Leu Asp  
5337                    165                    170                    175  
5339 Leu Leu Ala Met Tyr Pro Asn Gln Met Ile Tyr Gln Asp Gln Asp Ile  
5340                    180                    185                    190  
5342 Leu Asn Ile Leu Phe Arg Asn Lys Val Cys Tyr Leu Asp Cys Arg Phe  
5343                    195                    200                    205  
E--> 5345 Asn Phe Met Pro Asn Gln Leu Glu Arg Ile Xaa Gln Tyr His Lys Gly  
5346                    210                    215                    220  
E--> 5348 Lys Xaa Ser Asn Leu His Ser Leu Glu Lys Thr Thr Met Pro Val Val  
5349    225                    230                    235                    240  
5351 Ile Ser His Tyr Cys Gly Pro Glu Lys Ala Trp His Ala Asp Cys Lys  
5352                    245                    250                    255  
E--> 5354 His Phe Asn Val Tyr Phe Tyr Gln Lys Ile Leu Ala Xaa Xaa Ser Arg  
5355                    260                    265                    270  
E--> 5357 Gly Xaa Asp Lys Glu Arg Val Leu Ser Ile Lys Thr Tyr Leu Lys Ala  
5358                    275                    280                    285  
5360 Leu Ile Arg Arg Ile Arg Tyr Lys Phe Lys Tyr Gln Val Tyr  
5361                    290                    295                    300  
5472 <210> SEQ ID NO: 38

*Dem 9*  
*Dem 9*  
*Dem 9*  
*Dem 9*

## RAW SEQUENCE LISTING

DATE: 09/07/2001

PATENT APPLICATION: US/09/508,095

TIME: 14:23:53

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

5473 &lt;211&gt; LENGTH: 166

5474 &lt;212&gt; TYPE: PRT

5475 &lt;213&gt; ORGANISM: Pasteurella multocida

5477 &lt;400&gt; SEQUENCE: 38

5478 Leu Asn Lys Ala Gly Lys Ile Gln Tyr Val Leu Leu Lys Gly Asn Gln

5479 1 5 10 15

5481 Gly His Pro Asp Ala Glu Ala Arg Thr Lys Phe Val Ile Lys Glu Leu

5482 20 25 30

E--> 5484 Xaa Asn Lys Gly Ile Gln Asp Glu Gln Leu Phe Ile Asp Thr Gly Met *item 9*

5485 35 40 45

5487 Trp Asp Ala Ala Leu Ala Lys Asp Lys Met Asp Ala Trp Leu Ser Ser

5488 50 55 60

5490 Ser Lys Ala Asn Gln Ile Glu Val Ile Ile Ala Asn Asn Asp Gly Met

5491 65 70 75 80

5493 Ala Met Gly Ala Leu Glu Ala Thr Lys Ala His Gly Lys Lys Leu Pro

5494 85 90 95

E--> 5496 Ile Phe Xaa Val Xaa Ala Leu Pro Glu Val Leu Gln Leu Ile Lys Lys *item 9*

5497 100 105 110

5499 Gly Glu Ile Ala Gly Thr Val Leu Asn Asp Gly Val Asn Gln Gly Lys

5500 115 120 125

5502 Ala Val Val Gln Leu Ser Asn Asn Leu Ala Lys Gly Lys Pro Ala Thr

5503 130 135 140

5505 Glu Gly Thr Lys Trp Gln Leu Lys Arg Ser Cys Pro Thr Tyr Pro Leu

5506 145 150 155 160

5508 Cys Trp Cys Gly Cys Gly

5509 165

11512 &lt;210&gt; SEQ ID NO: 103

11513 &lt;211&gt; LENGTH: 1643

11514 &lt;212&gt; TYPE: PRT

11515 &lt;213&gt; ORGANISM: Pasteurella multocida

11517 &lt;400&gt; SEQUENCE: 103

11518 Met Asn Lys Asn Arg Tyr Lys Leu Ile Phe Ser Gln Val Lys Gly Cys

11519 1 5 10 15

11521 Leu Val Pro Val Ala Glu Cys Ile Asn Ser Ala Ile Ser Asn Gly Ser

11522 20 25 30

11524 Ser Asp Ser Thr Ser Thr Ser Glu Gln Val Glu Glu Glu Pro Phe Leu

11525 35 40 45

11527 Leu Glu Gln Tyr Ser Leu Ser Ser Val Ser Leu Leu Val Lys Ser Thr

11528 50 55 60

11530 Phe Asn Pro Val Ser Tyr Ala Met Gln Leu Thr Trp Lys Gln Leu Ser

11531 65 70 75 80

11533 Ile Leu Phe Leu Thr Val Ile Ser Val Pro Val Leu Ala Glu Gly Lys

11534 85 90 95

11536 Gly Asp Glu Arg Asn Gln Leu Thr Val Ile Asp Asn Ser Asp His Ile

11537 100 105 110

11539 Lys Leu Asp Ala Ser Asn Leu Ala Gly Asn Asp Lys Thr Lys Ile Tyr

11540 115 120 125

11542 Gln Ala Glu Asn Lys Val Leu Val Ile Asp Ile Ala Lys Pro Asn Gly

11543 130 135 140

P.13

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/508,095

DATE: 09/07/2001

TIME: 14:23:54

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

```

11545 Lys Gly Ile Ser Asp Asn Arg Phe Glu Lys Phe Asn Ile Pro Asn Ser
11546 145 150 155 160
11548 Ala Val Phe Asn Asn Asn Gly Thr Glu Ala Gln Ala Arg Ser Thr Leu
11549 165 170 175
11551 Ile Gly Tyr Ile Pro Gln Asn Gln Asn Leu Arg Gly Gly Lys Glu Ala
11552 180 185 190
11554 Asp Val Ile Leu Asn Gln Val Thr Gly Pro Gln Glu Ser Lys Ile Val
11555 195 200 205
11557 Gly Ala Leu Glu Val Leu Gly Lys Lys Ala Asp Ile Val Ile Ala Asn
11558 210 215 220
11560 Gln Asn Gly Ile Thr Leu Asn Gly Val Arg Thr Ile Asn Ser Asp Arg
11561 225 230 235 240
11563 Phe Val Ala Thr Thr Ser Glu Leu Ile Asp Pro Asn Gln Met Met Leu
11564 245 250 255
11566 Lys Val Thr Lys Gly Asn Val Ile Ile Asp Ile Asp Gly Phe Ser Thr
11567 260 265 270
11569 Asp Gly Leu Lys Tyr Leu Asp Ile Ile Ala Lys Lys Ile Glu Gln Lys
11570 275 280 285
11572 Gln Ser Ile Thr Ser Gly Asp Asn Ser Glu Ala Lys Thr Asp Val Thr
11573 290 295 300
11575 Leu Ile Ala Gly Ser Ser Glu Tyr Asp Leu Ser Lys His Glu Leu Lys
11576 305 310 315 320
11578 Lys Thr Ser Gly Glu Asn Val Ser Asn Asp Val Ile Ala Ile Thr Gly
11579 325 330 335
11581 Ser Ser Thr Gly Ala Met His Gly Lys Asn Ile Lys Leu Ile Val Thr
11582 340 345 350
11584 Asp Lys Gly Ala Gly Val Lys His Asp Gly Ile Ile Leu Ser Glu Asn
11585 355 360 365
11587 Asp Ile Gln Ile Glu Met Asn Glu Gly Asp Leu Glu Leu Gly Asn Thr
11588 370 375 380
11590 Ile Gln Gln Thr Val Val Lys Lys Asp Arg Asn Ile Arg Ala Lys Lys
11591 385 390 395 400
11593 Lys Ile Glu Val Lys Asn Ala Asn Arg Val Phe Val Gly Ser Gln Thr
11594 405 410 415
11596 Lys Ser Asp Glu Ile Ser Leu Glu Ala Lys Gln Val Lys Ile Arg Lys
11597 420 425 430
11599 Asn Ala Glu Ile Arg Ser Thr Thr Gln Ala Lys Ile Val Ala Lys Gly
11600 435 440 445
11602 Ala Leu Ser Ile Glu Gln Asn Ala Lys Leu Val Ala Lys Lys Ile Asp
11603 450 455 460
11605 Val Ala Thr Glu Thr Leu Thr Asn Ala Gly Arg Ile Tyr Gly Arg Glu
11606 465 470 475 480
11608 Val Lys Leu Asp Thr Asn Asn Leu Ile Asn Asp Lys Glu Ile Tyr Ala
11609 485 490 495
11611 Glu Arg Lys Leu Ser Ile Leu Thr Lys Gly Lys Asp Leu Glu Ile Ile
11612 500 505 510
11614 Gln Asp Arg Tyr Leu Ser Pro Leu Met Arg Val Lys Ser Ser Val Arg
11615 515 520 525
11617 Phe Leu Gly Ser Pro Phe Phe Ser Ile Ser Pro Ser Met Leu Ala Ser

```

## RAW SEQUENCE LISTING

DATE: 09/07/2001

PATENT APPLICATION: US/09/508,095

TIME: 14:23:54

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

```

11618:      530                      535                      540
11620 Leu Ser Ala Gln Phe Lys Pro Gly Phe Val Asn Lys Gly Leu Ile Glu
11621 545                      550                      555                      560
11623 Ser Ala Gly Ser Ala Glu Leu Thr Phe Lys Glu Lys Thr Ser Phe Leu
11624                      565                      570                      575
11626 Thr Glu Gly Asn Asn Phe Ile Arg Ala Lys Asp Ala Leu Thr Ile Asn
11627                      580                      585                      590
11629 Ala Gln Asn Ile Glu Ile Asp Lys Asn Gln Asp Ile Gln Leu Gly Ala
11630                      595                      600                      605
11632 Asn Ile Thr Leu Asn Val Glu Glu Asn Phe Val Asn Arg Ala Gly Thr
11633      610                      615                      620
11635 Leu Ala Thr Gly Lys Thr Leu Thr Ile Asn Thr Glu Ser Gly Ser Ile
11636 625                      630                      635                      640
11638 Tyr Asn Leu Gly Gly Thr Leu Gly Ala Gly Lys Ser Leu Lys Leu Thr
11639                      645                      650                      655
11641 Ala Lys Ser Thr Glu Glu Gly Met Gly Asn Ile Val Asn Gln Glu Asn
11642                      660                      665                      670
11644 Gly Leu Phe His Thr Leu Gly Asn Met Met Leu Glu Ala Glu Arg Ser
11645                      675                      680                      685
11647 Val Tyr Asn Ile Gly Asp Ile Tyr Ala Ser Lys Lys Leu Thr Val His
11648      690                      695                      700
11650 Thr His Asn Leu Ile Asn Asp Val Arg Leu Ser Gly Asn Val Ser Tyr
11651 705                      710                      715                      720
11653 Lys Pro Ile Gly Ser Ser Arg Asp Tyr Asp Ile Ser Arg Val Ala Val
11654                      725                      730                      735
11656 His Gly Trp His Asn Asn Val Tyr Lys Leu Asn Leu Asn Leu Glu
11657                      740                      745                      750
11659 Gln Asp Lys Thr Asp Ile Lys Val Val Lys Met Gly Ala Ile Arg Ser
11660                      755                      760                      765
11662 Asp Gly Asp Phe Asp Phe Lys Gly Ile Lys Ala Thr Ser Ser Glu Ser
11663      770                      775                      780
11665 Lys Pro Gln Leu Ile Asn His Gly Leu Ile Asn Val Lys Gly Thr Phe
11666 785                      790                      795                      800
11668 Asn Ala Glu Ala Asp Gln Val Val Asn Gln Met Lys Ala Phe Asn Gln
11669                      805                      810                      815
11671 Asn Ala Leu Ala Ser Val Phe Lys Asn Pro Ala Lys Ile Thr Met Tyr
11672                      820                      825                      830
11674 Tyr Gln Pro Leu Thr Arg Tyr Ile Trp Thr Pro Leu Ser Gly Asn Ala
11675      835                      840                      845
11677 Ser Arg Glu Phe Asn Asn Leu Glu Ser Phe Leu Asp Ala Leu Phe Gly
11678      850                      855                      860
11680 Ser Thr Thr Ile Leu Lys Ser Ser Phe Tyr Ser Thr Glu Asn Phe Ser
11681 865                      870                      875                      880
11683 Ala Tyr Gln Leu Leu Ser His Ile Gln His Ser Pro Met Tyr Gln Lys
11684                      885                      890                      895
11686 Ala Met Ala Gln Val Phe Gly Ala Glu Trp His Ser Lys Ser Tyr Asp
11687                      900                      905                      910
11689 Glu Met Arg Asn Lys Trp Lys Ser Phe Lys Glu Asn Pro Thr Asp Phe
11690                      915                      920                      925

```

## RAW SEQUENCE LISTING

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DATE: 09/07/2001

TIME: 14:23:54

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

11692 Ile Tyr Tyr Pro Ser Glu Lys Ala Lys Ile Leu Ala Gly Lys Leu Glu  
11693 930 935 940  
11695 Gly Lys Leu Thr Thr Leu Gln Asn Gly Glu Tyr Ala Glu Arg Gly Lys  
11696 945 950 955 960  
11698 Phe Asp Glu Ser Ile Gln Ile Gly Lys His Gln Leu Ser Leu Pro Ser  
11699 965 970 975  
11701 Val Glu Leu Lys Ala Glu Phe Ser Asp Lys Glu Arg Leu Glu Glu Asp  
11702 980 985 990  
11704 Gly Val Asp Leu Ser Ser Ile Ala Glu Leu Leu Glu Met Pro Asn Leu  
11705 995 1000 1005  
11707 Phe Ile Asp Asn Ser Ile Gln Leu Glu Lys Lys Lys Leu Ser Pro Ile  
11708 1010 1015 1020  
11710 Glu Asp Leu Asp Glu Glu Pro Arg Lys Asn Leu Asp Ile Glu Glu Ser  
11711 1025 1030 1035 1040  
11713 His Ser Asn Ser Ser Asp Asp Val Leu Ser Met Asn Asp Asp Glu Ser  
11714 1045 1050 1055  
11716 Asp Thr Asp Asp Ser Lys Trp Ser Met Gly Asn Asp Glu Lys Glu Met  
11717 1060 1065 1070  
11719 Pro Asp Asp Lys Leu Gly Ile Ser Arg Asp Asp Arg Gly Asn Lys Pro  
11720 1075 1080 1085  
11722 Pro Arg Thr Asp Pro Thr Val Asp Tyr Leu Asn Pro Asp Glu Phe Phe  
11723 1090 1095 1100  
11725 Glu Asn Gly Tyr Leu Leu Asn Glu Leu Leu Gln Glu Leu Gly Glu Glu  
11726 1105 1110 1115 1120  
11728 Pro Leu Leu Lys Glu Gly Glu Asp His Phe Lys Arg Ser Thr Asn Leu  
11729 1125 1130 1135  
11731 Val Arg Leu Gly Glu Arg Asp Arg Gln Asn Arg Glu Lys Arg Glu Lys  
11732 1140 1145 1150  
11734 Glu Gly Tyr Phe Asp Leu Pro Gly Thr Leu Asp Met Lys Leu Gln Glu  
11735 1155 1160 1165  
11737 Leu Phe Glu Lys Arg Lys Gln Lys His Glu Ala Glu Gln Lys Ala Arg  
11738 1170 1175 1180  
11740 Ile Glu Lys Ala Leu Leu Gln Lys Ser Glu Gln Gln Glu Lys Arg Val  
11741 1185 1190 1195 1200  
11743 Glu Glu Arg Lys Gln Glu Glu Lys Arg Gln Ala Gln Asp Lys Ile Ala  
11744 1205 1210 1215  
11746 Lys Gln Val Glu Ile Ala Lys Glu Met Gln Arg Val Glu Glu Ile Arg  
11747 1220 1225 1230  
11749 Gln Arg Glu Lys Gln Leu Ala Ile Gln Leu Gln Glu Glu Lys Lys  
11750 1235 1240 1245  
11752 Gln Gln Glu Glu Lys His Leu Ser Glu Glu Lys Lys Gln Ala Glu Gln  
11753 1250 1255 1260  
11755 Lys Gln Lys Ala Glu Glu Lys Val Ala Gln Glu Arg Leu Asp Ile Glu  
11756 1265 1270 1275 1280  
11758 Gln Gln Lys Ala Tyr Glu Glu Met Ala Lys Arg Glu Ala Glu Ala Ser  
11759 1285 1290 1295  
11761 Lys Asn Val Leu Leu Lys Ala Ile Asp Glu Glu Arg Pro Lys Val Glu  
11762 1300 1305 1310  
11764 Thr Asp Pro Leu Phe Arg Thr Lys Leu Lys Tyr Ile Asn Gln Asp Asp

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/508,095

DATE: 09/07/2001

TIME: 14:23:54

Input Set : C:\Crif3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

```

11765      1315      1320      1325
11767 Tyr Ala Gly Ala Asn Tyr Phe Phe Asn Lys Val Gly Leu Asn Thr Lys
11768      1330      1335      1340
11770 Gly His Gln Lys Val Asn Val Leu Gly Asp Asn Tyr Phe Asp His Gln
11771 1345      1350      1355      1360
11773 Val Ile Thr Arg Ser Ile Glu Lys Lys Val Asp Asn His Leu Asn Gln
11774      1365      1370      1375
11776 Lys Tyr Asn Leu Ser Asp Val Glu Leu Val Lys Gln Leu Met Asp Asn
11777      1380      1385      1390
11779 Ser Thr Thr Gln Ala Gln Glu Leu Asp Leu Lys Leu Gly Ala Ala Leu
11780      1395      1400      1405
11782 Thr Lys Glu Gln Gln Ala Asn Leu Thr Gln Asp Ile Val Trp Tyr Val
11783 1410      1415      1420
11785 Lys Thr Lys Val Lys Gly Lys Asp Val Phe Val Pro Lys Val Tyr Phe
11786 1425      1430      1435      1440
11788 Ala Ser Glu Thr Leu Val Glu Ala Gln Lys Leu Gln Gly Leu Gly Thr
11789      1445      1450      1455
11791 Gly Thr Ile Arg Val Gly Glu Ala Lys Ile Lys Ala Lys Asp Val Val
11792      1460      1465      1470
11794 Asn Thr Gly Thr Leu Ala Gly Arg Lys Leu Asn Val Glu Ala Ser Asn
11795 1475      1480      1485
11797 Lys Ile Lys Asn Gln Gly Ser Ile Leu Ser Thr Gln Glu Thr Arg Leu
11798 1490      1495      1500
11800 Val Gly Arg Lys Gly Ile Glu Asn Val Ser Arg Ser Phe Ala Asn Asp
11801 1505      1510      1515      1520
11803 Glu Leu Gly Val Thr Ala Gln Arg Ser Glu Ile Lys Thr Glu Gly His
11804      1525      1530      1535
11806 Leu His Leu Glu Thr Asp Lys Asp Ser Thr Ile Asp Val Gln Ala Ser
11807 1540      1545      1550
11809 Asp Ile Lys Ala Lys Thr Ser Phe Val Lys Thr Gly Asp Val Asn Leu
11810 1555      1560      1565
11812 Lys Asn Thr Tyr Asn Thr Lys His Ala Tyr Arg Glu Lys Phe Ser Pro
11813 1570      1575      1580
11815 Ser Ala Leu Gln Val Ala Glu Leu Asp Val Ala Gly Leu Lys Val Pro
11816 1585      1590      1595      1600
11818 Leu Leu Gly Val Ser Val Ser Ile Gln Phe Ile Gln Ser Ile Leu Val
11819      1605      1610      1615
E--> 11821 Arg Gln Leu Gln Glu Gly Ser Ile Phe Glu Val Gly His Leu His Xaa
11822      1620      1625      1630
11824 Ala Val Asp Arg Arg Cys Glu Pro Ser Gly Glu
11825      1635      1640

```

FYI →

Use of n and/or Xaa has been detected in the Sequence Listing.  
 Review the Sequence Listing to insure a corresponding  
 explanation is presented in the <220> to <223> fields of  
 each sequence using n or Xaa.

## VERIFICATION SUMMARY

DATE: 09/07/2001

PATENT APPLICATION: US/09/508,095

TIME: 14:23:56

Input Set : C:\Cr3\Datahold\09545199

Output Set: N:\CRF3\09072001\I508095.raw

L:2 M:270 C: Current Application Number differs, Replaced Current Application No  
L:2 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:2 M:289 W: Identifier Missing or Out-Of-Order, <150> PRIOR APP NO  
L:0 M:201 W: Mandatory field data missing, APPLICANT NAME  
L:0 M:201 W: Mandatory field data missing, TITLE INVENTION  
L:0 M:201 W: Mandatory field data missing, FILE REFERENCE  
L:100 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1  
L:2151 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:16  
M:332 Repeated in SeqNo=16  
L:3766 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27  
L:3767 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27  
L:3770 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27  
L:3771 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27  
L:3774 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27  
L:3775 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27  
L:3882 M:340 E: (46) "n" or "Xaa" used: Feature required, for SEQ ID#:28  
M:340 Repeated in SeqNo=28  
L:5261 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35  
L:5262 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35  
L:5273 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35  
L:5274 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35  
L:5289 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35  
L:5297 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35  
L:5345 M:340 E: (46) "n" or "Xaa" used: Feature required, for SEQ ID#:36  
M:340 Repeated in SeqNo=36  
L:5385 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5386 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5401 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5402 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5433 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5435 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5461 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5463 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37  
L:5484 M:340 E: (46) "n" or "Xaa" used: Feature required, for SEQ ID#:38  
M:340 Repeated in SeqNo=38  
L:5609 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39  
L:6532 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47  
L:9085 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:72  
L:10782 M:258 W: Mandatory Feature missing, <221> not found for SEQ ID#:90  
L:10782 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:90  
L:10782 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90  
L:10784 M:258 W: Mandatory Feature missing, <221> not found for SEQ ID#:90  
L:10784 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:90  
L:10784 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:90  
L:11503 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102  
L:11504 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:102  
L:11821 M:340 E: (46) "n" or "Xaa" used: Feature required, for SEQ ID#:103